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PROPOSED 5-10-15 M.C. RECEIVER DEVELOPMENT

Summary

The developmental model of the 5-10-15 M.C. receiver will use the I.F. amplifier and audio system design and most of the mechanical design principles now used in the F.T.S. 545 5 M.C. receiver. Philco Surface Barrier transistors will be used in the R.F. amplifier, local oscillator and mixer stages of the receiver.

With the exception of Phase I, which is a general investigation, the program would require approximately 6 man months. This would mean an elapsed time of 3 months, since one engineer and one technician would work together on the problem.

Phase I - Investigation of Surface Barrier Transistors

This phase of the project is being done by the research group at the present time. Complete data on the use of the S.B.T. as a circuit element are being obtained and evaluated. Phase I will probably be completed by August 1, 1954.

Phase II - R.F. Amplifiers Design

After Phase I has been completed, the R.F. amplifiers for the 5-10-15 M.C. receiver will be designed. The R.F. section will consist of two or three R.F. amplifiers. The number of stages will be determined by the power gain obtainable with the S.B.T. at 15 M.C.

The R.F. amplifiers will be slug tuned by a mechanical system which may be set in one of three positions. The oscillator tuning will be coupled to the same mechanical system. Design of a suitable mechanical tuning system is expected to be the most difficult problem to solve in Phase II.

Phase III Oscillator Design

The oscillator will be crystal controlled at each of the three frequencies to which it must be tuned. This will be accomplished with three McCoy M-20 crystals. The crystal switches will be gauged to the R.F. tuning control.

Phase IV - Mixer Design

Transformer design will be the most difficult problem in this Phase, since Phase I will provide most of the electrical design.

Phase V - Construction

The receiver will be constructed on the printed circuit chassis used for receiver F.T.S. 545. A chassis containing the I.F. amplifiers and audio system has already been set aside for use on this project.

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Phase VI - Tests

The receiver will be subjected to complete electrical tests and temperature tests up to 45° C.

Phase VII - Reports

The technical report will include a complete discussion of the final design and the results of the tests.

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